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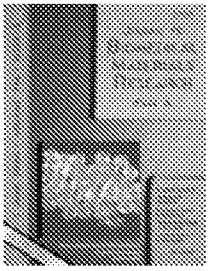

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Degradation behaviors of biodegradable macroporous scaffolds prepared by gas foaming of efferv salts

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Abstract

Biodegradable polymeric scaffolds for tissue engineering were fabricated by a gas-foaming/salt-leaching method using a cor of two effervescent salts, ammonium bicarbonate and citric acid. Poly(D,L-lactic-*co*-glycolic acid) (PLGA) in a state of gel-lik was first produced by precipitation of PLGA dissolved in chloroform into ethanol. The polymer slurry was mixed with sieved p ammonium bicarbonate, molded, and then immersed in an aqueous solution of citric acid to generate macroporous scaffolds scaffolds had relatively homogeneous pore structures throughout the matrix and showed an average pore size of 200 μm a 90% porosity. By adjusting the concentration of citric acid in the aqueous medium, it was possible to control porosity as well

mechanical strength of the scaffolds. *In vitro* degradation studies of three different scaffolds having lactic/glycolic acid molar 75/25, 65/35, and 50/50 exhibited marked swelling behaviors at different critical time points. The swollen matrices had a hyd internal structure. It was found that massive water uptake into the degrading scaffolds induced matrix swelling, which facilita hydrolytic scission of PLGA chains with concomitant disintegration of the matrices. © 2001 John Wiley & Sons, Inc. J Biome Res 55: 401-408, 2001

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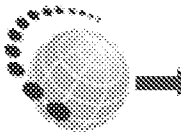

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